REPLACEMENT ABSTRACT

An electronic device for performing biological operations includes a support substrate and an array of microlocations disposed on the substrate. The array of microlocations include electronically addressable electrodes. A first collection electrode is disposed on the substrate and adjacent to a first side of the array of microlocations. A second collection electrode is disposed on the substrate and adjacent to a second side of the array of microlocations, the second side of the array being opposite of the first side such that the array of microlocations is disposed between the first and second collection electrodes. A flow cell is supported on the substrate. Preferably, the combined area of the collection electrodes is a substantial fraction, preferably at least 50% of the area of the footprint of the flow cell.